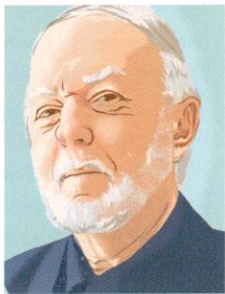


Eugenics will inevitably be used by those with wealth and power to make others believe that to be prenatally genetically modified makes you better.

## On Designer Babies By Sheldon Krimsky, Ph.D.



YOU MAY REMEMBER A SHORT period in the 1990s when a broad consensus emerged among biologists about the ethics of human genetic engineering. Somatic cell gene therapy was considered an acceptable biomedical research program, whereas germ line genetic modifica-

tion was treated as unethical. By the new millennium, that moral boundary had eroded.

A recent debate in New York City in which I was a participant highlighted the cultural change. Our topic: “Babies Should Not Be Genetically Engineered.” I argued in support of the proposition to prohibit the genetic modification of human reproductive cells prior to gestation in the womb.

Two compelling reasons to genetically alter human reproductive cells in preparation for childbirth, I argued, are for curing or preventing a disease or for the “enhancement” of a child. With respect to the former, there are safer and more dependable methods for preventing the birth of a child with a severe genetic abnormality than by genetic modification of the germ cells. The use of prenatal screening or preimplantation embryo diagnosis will suffice in most cases to prevent the birth of a genetically abnormal embryo.

Accordingly, the only remaining rationale for engaging in the genetic modification of human reproductive cells is for enhancement of the child to achieve such traits as heightened intelligence, resistance to disease, muscle strength, appealing personality or longevity, to cite a few common examples. I believe that pursuit of this goal represents the greatest scientific folly and moral failure.

First, for whatever enhancement is sought, the only method for determining efficacy is to engage in a clinical trial with a few dozen fertilized human eggs or embryos, where half would be genetically modified, all would be carried to term, and the development of the children would be followed throughout their lives to determine whether the genetic modification

worked and worked safely. No animal studies can answer these questions.

It is unimaginable that any humane society would permit such a trial where the potential risks so outweigh the social benefits.

The second reason to shun genetic enhancement is that it makes no sense from a biological and developmental perspective. The human traits typically cited for enhancement, such as intelligence, personality or musicianship, are complex and not only involve dozens if not hundreds of genes, but are the result of a complex mix of determinants, including nutrition, social and environmental factors, gene-to-gene interactions and epigenetic switches that are outside the reductive chemistry of the DNA code.

Even for height, one of the most heritable traits known, scientists have discovered at least 50 genes that can account for 2 to 3 percent of the variance in the samples. There could be hundreds of genes associated with height. If you want a tall child, then marry tall.

Finally, the idea of genetic enhancement grows out of a eugenics ideology that human perfection can be directed by genetics. I am all for human enhancement, but it must start after an egg is fertilized beginning in utero—by protecting the fetus from neurotoxins and other endocrine-disrupting substances and continuing after birth with nutritional and cognitive enrichment and moral education, for example.

The greatest danger of a belief in genetics engineering lies in its likely social impact. Eugenics will inevitably be used by those with wealth and power to make others believe that to be prenatally genetically modified makes you better. This would be as much a myth as believing that the sperm from Nobel Laureates will produce a genius child.

---

*The author is the Lenore Stern Professor of Humanities and Social Sciences at Tufts University and an adjunct professor of public health and community medicine. He is coeditor of *Biotechnology in Our Lives: What Modern Genetics Can Tell You about Assisted Reproduction, Human Behavior, and Personalized Medicine, and Much More* (WW Norton & Co., June 2013).*